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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Aiden Flanagan

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EXAMINER

ABOAGYE, MICHAEL

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/784,549	Applicant(s) FLANAGAN, AIDEN	
	Examiner MICHAEL ABOAGYE	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 48-69 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 48-69 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 48-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapovalov et al. (US Patent No. 6,563,080) in view of Freedenburg et al. (US Patent No. 5,620,618) and Weerasinghe et al. (GB 2244851).

Shapovalov et al. teaches a method of manufacturing a medical device from a work-piece, comprising: generating a beam of radiation from a radiation source, and directing the radiation beam onto the workpiece so that the radiation beam cuts a desired pattern in the workpiece (column 1, lines 36- 43; and column 2, lines 11-24); wherein the workpiece is a tubular "247" (column 2, lines 50-53 and figure 5); redirecting the radiation beam so that it impinges on the circumference of the tubular workpiece (Figure 5); positioning at least one optical element along an optical path between the radiation source and the workpiece (figure 5: (optical elements 240, 220, 215, 214, and 205); wherein the workpiece comprises a biocompatible material, said material being stainless steel; wherein the medical device is a stem (column 1, lines 28-35); wherein the medical device is a catheter (column 1, lines 15-18); wherein the tubular workpiece

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is translated along its longitudinal axis during the step of directing the radiation beam; wherein the tubular workpiece is rotated about its longitudinal axis during the step of directing the radiation beam; wherein the tubular workpiece is rotated about its longitudinal axis during the step of directing the radiation beam (column 4, lines 27-33; column 5, lines 39-47 and figure 5); wherein the radiation beam is a laser beam; wherein the laser beam is a pulsed laser beam (column 5, lines 23-38, and figure 3d); wherein each subsequent scan over the common path removes additional material from the workpiece; wherein the prescribed pattern defines an opening in the tubular workpiece, (note the process of cutting, polishing, engraving and the like removes material and also creates a hole in the stent),(column 2, lines 50-53, and column 6, lines 9-11).

Shapovalov et al. does not expressly teach scanning the beam with a galvanometer comprising a comprising two mirrors pivoted about two orthogonally axis and F-theta lens for generating a flat focal plane before impinging the workpiece.

However, Freedenburg et al. teaches an apparatus and a method of laser machining. The method practiced with the apparatus having a galvanometer comprising two mirrors pivoted about two orthogonally axis and disposed along the optical path of the laser beam to permit bidirectional scanning of the beam onto the workpiece for cutting, machining or processing the workpiece without interruption (column 13, lines 59-67); said scanner "59" having moving mirrored surface 50, 50' for redirecting a laser beam "125", at an angle of 90 °C in the X-Y plane ("50", figure 7, column 10, lines 12-15, and figures 5A, 5B); Freedenburg et al. also teaches disposing along the optical

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path of the laser beam an F-theta lens (flat field telecentric lens) for and also directing the beam such that the center of focus is planar and perpendicular (i.e. 90 °C) to the target at all points along the scan field (column 3, lines 56-67). Note the F-theta lens of Freedenburg et al. includes the conical and elliptical mirrors recited in claims 32 and 33. Freedenburg et al. also teaches the laser beam over a common path a plurality of times by redirecting from a first end of the workpieces to a second end and then retracting back to the first end (Freedenburg et al., column 13, and lines 59-65).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have disposed a galvanometer and an F-theta lens along the optical path of the laser beam in the method of Shapovalov et al. as taught by Freedenburg et al. in order to permit scanning the laser over a common path a plurality of times along the circumference of the workpiece for cutting, machining or processing the workpiece without interruption (Freedenburg et al., column 13, lines 59-67), and also to obtain a beam planar and perpendicular (i.e. 90 °C) to the target at all points along the scan field (Freedenburg et al. (column 3, lines 56-67) thereby permitting the production and machining of micro- components at high output and low defect rates (Freedenburg et al., column 4, lines 5-9).

Shapovalov et al. and Freedenburg et al. do not expressly teach a conical mirror in the optical path.

Weerasinghe et al. teaches a method of laser cutting, scribing or drilling having a conical mirror disposed in the optical path for producing circular beam which produces a non-directional beam which is equally polarized in all directions and therefore enhances

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the laser cutting or the drilling speed, produces perfect circular drill holes in a workpieces compared to distorted shaped produced by plane polarized beams. Said conical mirror is also less sensitive to misalignment since the mode axis is not displaced (Weerasinghe et al. , abstract, page 1 and figures 1 and 2).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to use a conical mirror in the combined teaching of Shapovalov et al. and Freedenburg et al. as taught by Weerasinghe et al. to improve certain qualities of the laser beam, example, beam speed, polarization and alignment of mode axis and thereby improving the quality of the laser processing operation (Weerasinghe et al. page 1).

Response to Arguments

3. The examiner acknowledges the applicants' amendment received by USPTO on December 17, 2007. Claims 48-69 remain under consideration in this application.

4. Applicant's arguments filed December 17, 2007 have been fully considered but they are not persuasive. Applicant argues that Weerasinghe et al. does not employ the conical mirror to redirect the radiation beam so that it is scanned about a circumference of the workpiece, as in the present invention, that the conical mirror and the workpiece are positioned in the manner claimed only because the present invention uses the conical mirror for the purpose of scanning the beam about a circumference of the workpiece. The examiner disagrees. It should be noted that, the features (i.e. the

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conical mirror to redirect the radiation beam so that it is scanned about a circumference of the workpiece) upon which the applicant relies on in his argument are not explicitly recited in the claim(s). Secondly, the applicant's disclosure shows no indication that said conical mirror is used for scanning. Applicant's attention is drawn the specification paragraph [0033] which states in part **“As shown in FIG. 2, a beam 106 of laser radiation is output from laser source 104. Beam 106 is scanned via the use of an x-y scanning galvanometer using mirrors 108a and 108b. Mirrors 108a and 108b may be controlled by any suitable controller.”** Furthermore, according to the figures the laser beam is scanned by the galvanometer before making incidence on the conical mirror. Finally claim 1, recites “the conical mirror positioned along the optical path between the radiation source and the workpiece”. The examiner agrees with the applicant that the conical mirror of Weerasinghe et al. is incorporated in the laser generator, however it is also true from figures 1 and 2 that said conical mirror is positioned in front of the laser source, hence in an assembly for cutting, scribing or drilling, the relative position of the conical mirror would necessarily be between the radiation source and the material or workpiece being processed. “Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541,550-51 (CCPA 1969). No substantive arguments were made against Shapovalov et al. and Freedenburg et al. references. The Examiner believes that the rejections of claims 48-

69 by the combination of Shapovalov et al., Freedenburg et al. and Weerasinghe et al. are appropriate, and therefore will remain.

Conclusion

5. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL ABOAGYE whose telephone number is (571)272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Aboagye/
Assistant Examiner,
Art Unit 1793

/Kevin P. Kerns/

Primary Examiner, Art Unit 1793